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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/530,077	09/22/2005	Marcos Giovani Bortoli	04306/0202707-US0	7459

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EXAMINER	
KASTURE, DNYANESH G	
ART UNIT	PAPER NUMBER
3746	

MAIL DATE	DELIVERY MODE
01/16/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/530,077	BORTOLI ET AL.	
	Examiner	Art Unit	
	DNYANESH KASTURE	3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 November 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 April 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

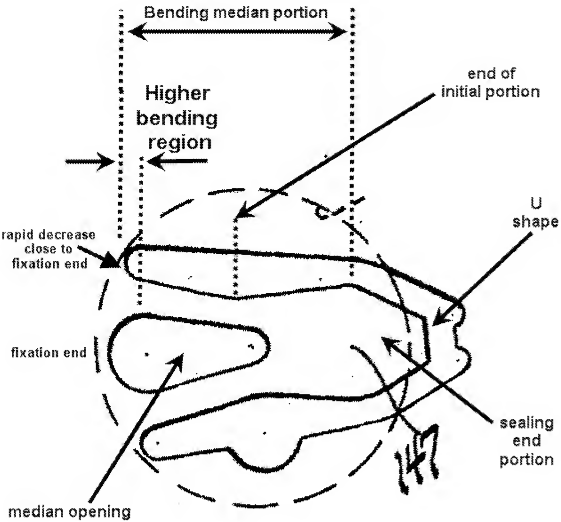
1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 12, 2008 has been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Black et al (US Patent 4,061,443 A) and as extrinsically evident from Shigley et al (Non Patent Literature: "Mechanical Engineering Design", Page 969)

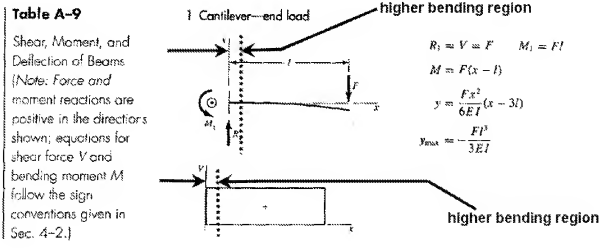


4. In Re claim 1, with reference to Figure 5 depicted above, Black et al discloses a suction valve (147) with a compression cylinder (165), which has one end closed by a valve plate (77), said valve comprising a flexible vane shaped to present:

- a fixation end portion (as depicted)

- a bending median portion (as depicted) provided with a median opening (as depicted) aligned with a discharge orifice (149) and a sealing end portion (as depicted) operatively associated with a suction orifice (145) provided in the valve plate (77)

- wherein the distance between an external edge of the flexible vane and its adjacent internal edge portion of the median opening diminishes progressively along a higher bending region from a maximum value close to end fixation portion to a minimum value at the close to the boundary of the higher bending region (as depicted above)



- with reference to Shigley et al, Table A-9 above depicts a cantilever (flexible vane) under end load (force due to suction in an open position of the vane). As evidenced from the shear force diagram, the shear force (V) resulting from the opening of the valve is uniformly distributed along the higher bending region NO MATTER HOW SMALL the higher bending region is. Further, as evidenced from the deflection (y) diagram, the deflection of the vane (y) is NOT a linear function of (x) implying that the vane has a curved shape in the higher bending region NO MATTER HOW SMALL the

higher bending region is. Therefore the vane IS bent in the higher bending region (due to its curved shape)

- the bending median portion and sealing end portion presents a U shape (as depicted)
- legs of the U shape are symmetrical about a longitudinal axis of the vane, they are equal length, and are united by the fixation end portion (as depicted, the fixation end is part of the fixation end portion)

5. In Re claim 2, Black et al discloses that the width of the median opening increases progressively from a region adjacent to the fixation end portion to the opposite boundary of the higher bending region (as depicted), whereas the total width of the flexible vane diminishes from the fixation end portion to the end of the initial portion as depicted and then it begins to progressively increase towards the sealing end portion. With regards to "from before the opposite boundary", when the point of reference is the tip of the U shape, the end of the initial portion is "before" the "opposite boundary of the higher bending portion".

6. In Re claim 5, Black et al discloses the distance between the external and internal edges diminishes more rapidly close to the fixation end portion than along the rest of the higher bending region.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 3, 4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Black et al (US Patent 4,061,443 A) in view of Ikeda et al (US Patent 4,764,091 A)

9. In Re claim 3, Black et al as applied to claim 2 discloses all the claimed limitations except for the median opening presenting a substantially semi-elliptical contour with its vertex tangent to the fixed end portion.

10. However, Ikeda et al discloses a semi-elliptical contour of the median opening along the higher bending region with its vertex being tangent to the fixation end portion.

11. It would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the contour of the median opening of Black et al along the higher bending region so it has a semi-elliptical shape as taught by Ikeda et al as an alternative design choice for the shape of the median opening in the higher bending region.

12. In Re claim 4, Black et al discloses that the median opening has a "substantially oval" contour as depicted.

13. In Re claim 8, Ikeda et al discloses a gap that is larger at the fixed end of the vane than its apex.

14. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Black et al (US Patent 4,061,443 A)

15. In Re claim 6, Black et al as applied to claim 1 discloses the claimed limitations except for the length of the higher bending region being 50 %. It would have been obvious to a person having ordinary skill in the art at the time of the invention to choose a value of 50 % since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art - MPEP 716.02 (b) [R2].

16. In Re claim 7, Black et al as applied to claim 1 discloses all the claimed limitations except for the polynomial shape as claimed. Note that fitting a polynomial to form a smooth curve along a set of data points is a well known statistical technique. In addition, applicant has stated that it is within the capability of a person skilled in the art to determine the coefficients of the polynomial from rigidity and bending parameters.

17. Alternatively, claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Black et al (US Patent 4,061,443 A) and in view of Kandpal (US Patent 5,266,016 A)

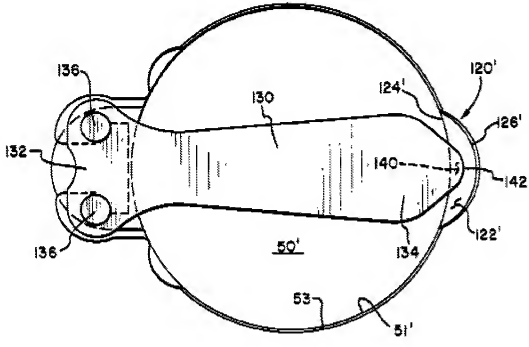


FIG. 4

18. In Re claim 2, Black et al discloses that the width of the median opening increases progressively from a region adjacent to the fixation end portion to the opposite boundary of the higher bending region (as depicted), whereas the total width of the flexible vane diminishes from the fixation end portion to the end of the initial portion as depicted and then it begins to progressively increase towards the sealing end portion.

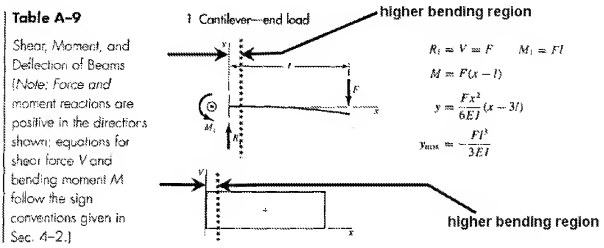
19. However, Black et al does not disclose "from before the opposite boundary", when the point of reference is the base at the fixed end.

20. Nevertheless, Kandpal discloses that the total width decreases at first but then progressively increases "from before the opposite boundary of the higher bending region".

21. It would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the contour of the vane of Black et al so that the width progressively increases "from before the opposite boundary of the higher bending region" as taught by Kandpal as an alternative design choice for the contour of the vane.

Response to Arguments

22. Applicant has argued that the structure of Black et al could not distribute opening forces and allow the reed to be bent along the higher bending region because the higher bending region is very small (fraction).



23. Examiner's Response: As discussed in the rejection of claim 1, the shear force (V) resulting from the opening of the valve is uniformly distributed along the higher bending region NO MATTER HOW SMALL the higher bending region is. Further, the deflection of the vane (y) is NOT a linear function of (x) implying that the vane has a curved shape in the higher bending region NO MATTER HOW SMALL the higher bending region is. Therefore the vane IS bent in the higher bending region (due to its curved shape).

24. Applicant's argument has been carefully considered but it is not persuasive for the reasons above. The examiner therefore respectfully disagrees with applicant's arguments.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DNYANESH KASTURE whose telephone number is (571)270-3928. The examiner can normally be reached on Mon-Fri, 9:00 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on (571) 272 - 7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devon C Kramer/
Supervisory Patent Examiner, Art Unit 3746

DGK